



UHD12-EXB400-K

**18Gbps HDMI 1x2 Splitter
Over CAT6 Up To 400ft**

USER MANUAL

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Thank you for purchasing this product

Thank you for purchasing this product. For optimum performance and safety, please read these instructions carefully before connecting, operating or adjusting this product. Please keep this manual for future reference.

Surge protection device recommended

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lightning strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the service life of your equipment.

Registration Page

Please Activate your warranty by registering our product through the link below - www.orei.com/register

Technical Support

Need Help?

Our experienced Technical Support Team is here for you to answer your questions, give technical advice or help troubleshoot your project to get you installed on time and on budget. Call, email or chat with us now.

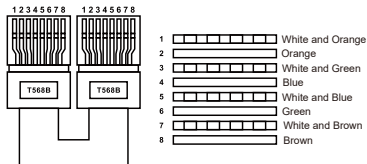
OREI Live Technical Support Hours

US team (US/Canada/Mexico): Monday-Friday, 9 a.m. - 6 p.m. Central Time **Support Email** - info@orei.com |

Support Number - 877-290-5530

Caution

The product requires the use of UTP connectors. Please connect in direct interconnection method and do not cross connect.



Direct Interconnection Method

Introduction

The UHD12-EXB400-K can distribute 1 source signal to 2 displays up to 400ft, with video resolution up to 4K@60Hz 4:4:4. Features an HDMI loop output on the Transmitter to connect a display at the source. The HDMI signal can be extended up to 394ft/120m at the resolution of 4K@60Hz, or 492ft/150m at 1080P@60Hz via a single CAT6/6a/7 cable. Up to 7.1CH HD audio pass-through on the HDMI ports. Features Bi-directional IR and RS-232 control. Coax and analog audio outputs at the Transmitter to connect an external audio device. Power over Ethernet (PoE) function; only requires power supply at the Transmitter to power the whole setup.



1. HDMI 2.0b, HDCP 2.2 and HDCP 1.x compliant
2. 18Gbps video bandwidth
3. Video resolution up to 4K@60Hz 4:4:4
4. HDR, HDR10+, HLG and Dolby vision
5. Up to 7.1CH HD audio pass-through on the HDMI ports
6. Digital and analog audio output on the Transmitter.
7. Extend HDMI signal up to 394ft/120m at 4K@60Hz, 492ft/150m at 1080P@60Hz via a single CAT6/6a/7 cable.
8. HDMI loop output on the Transmitter to connect a display near the source.
9. Bi-directional IR, and RS-232 control
10. Advanced EDID management
11. One-way POE (Power Over Ethernet) function from Transmitter to Receiver.
12. Features HDBaseT Technology

Package Contents

1.	1× UHD12-EXB400-K (Transmitter)	6.	1× 5pin-3.81mm Phoenix Connector (male)
2.	2× HDBaseT Receiver	7.	6× Mounting Ear
3.	3× IR Blaster Cable (1.5m)	8.	1× 24V/1A DC Locking Power Adapter
4.	3× IR Receiver Cable (1.5m)	9.	12× Machine Screws (KM3*4)
5.	3× 3pin-3.81mm Phoenix Connector (male)	10.	1× User Manual

Specifications

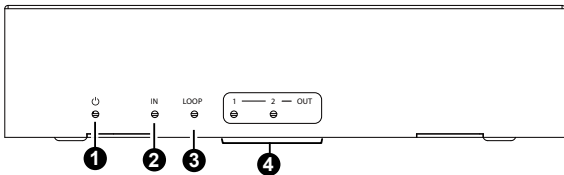
Technical	
HDMI Compliance	HDMI 2.0b
HDCP Compliance	HDCP 2.2/1.x
Video Bandwidth	594MHz/18Gbps
Video Resolution	480i ~1080P@50/60Hz, 2K@24/30/60Hz, 4K@24/30/60Hz
Color Depth	8-bit, 10-bit, 12-bit (1080p@60Hz) 8-bit (4K & 2K@60Hz YUV4:4:4) 8-bit, 10-bit, 12-bit (4K & 2K@60Hz YCbCr 4:2:2/4:2:0)
Color Space	RGB 4:4:4, YCbCr 4:4:4 / 4:2:2 / 4:2:0
HDR	HDR, HDR10+, HLG, Dolby vision (Note: For Dolby vision, the local HDMI loopout supports 4K@60Hz, but the remote HDMI output only supports 1080P@60Hz.)
HDMI Audio Formats	LPCM 2.0/2.1/5.1/6.1/7.1, Dolby Digital, Dolby TrueHD, Dolby Digital Plus(DD+), DTS-ES, DTS HD Master, DTS HD-HRA, DTS-X
Coaxial Audio Formats	PCM 2.0, Dolby Digital / Plus, DTS 2.0/5.1
Analog Audio Formats	PCM 2.0CH
ESD Protection	Human body model—±8kV (Air-gap discharge) & ±4kV (Contact discharge)
Connection	
Transmitter	Input: 1 × HDMI IN [Type A, 19-pin female] 1 × RS-232 [3-pin phoenix connector] 1 × IR IN [3.5mm stereo mini-jack] Output: 1 × HDMI LOOP OUT [Type A, 19-pin female] 2 × HDBT OUTPUT [RJ45] 1 × COAX AUDIO OUT [RCA] 1 × L/R AUDIO OUT [5-pin phoenix connector] 1 × IR OUT [3.5mm stereo mini-jack]

Specifications

Connection	
Receiver	Input: 1 × HDBT IN [RJ45, 8-pin female] 1 × IR IN [3.5mm Stereo Mini-jack] 1 × RS-232 [Phoenix jack] 1 × SERVICE [Mini-USB, Update port] Output: 1 × HDMI Type A [19-pin female] 1 × AUDIO OUT [3.5mm Stereo Mini-jack] 1 × IR OUT [3.5mm Stereo Mini-jack]
Mechanical	
Housing	Metal Enclosure
Color	Black
Dimensions	Transmitter: 170mm (L) × 130mm (W) × 40mm (H) Receiver: 140mm (L) × 65mm (W) × 18mm (H)
Weight	Transmitter: 689g/24.3oz Receiver: 155g/5.46oz
Power Consumption	18W (Max)
Power Supply	Input: AC 100-240V 50/60Hz, Output: DC 24V/1A (US/EU standards, CE/FCC/UL certified)
Operating Temperature	32-104°F / 0-40°C
Storage Temperature	-4-140°F / -20-60°C
Relative Humidity	20-90% RH (Non-condensing)

Operation Controls and Functions

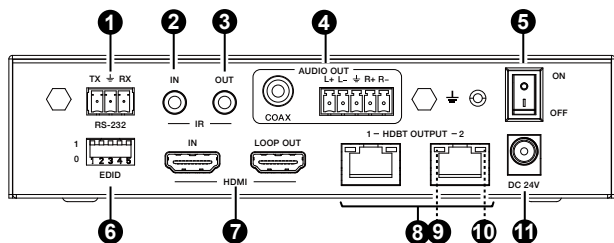
Transmitter: Front Panel



No.	Name	Function Description
1.	Power LED	When the device is powered on, the red power LED will turn on.
2.	IN LED	When an active source device is connected to the HDMI IN port, the green LED will turn on.
3.	LOOP LED	When an active display is connected to the HDMI LOOP OUT port, the green LED will turn on.
4.	OUT(1-2) LED	When the HDBT OUTPUT 1/2 port is connected to the HD-BaseT Receiver, the corresponding green LED will turn on.

Operation Controls and Functions

Transmitter: Rear Panel



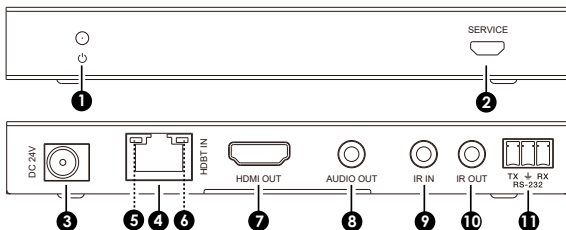
No.	Name	Function Description
1.	RS-232	Connect to a PC or control system via a 3-pin phoenix connector cable for three functions: 1. Firmware update; 2. Control the Splitter via RS-232 commands; 3. RS-232 signal pass-through (from transmitter to receiver or from receiver to transmitter).
2.	IR IN	Connect the IR receiver cable; the received signal will be emitted to the IR OUT port of the HDBaseT Receiver.
3.	IR OUT	Connect the IR blaster cable; it will transmit the signal received from the IR IN port of the HDBaseT Receiver.
4.	AUDIO OUT (COAX, L/R)	Coaxial/analog audio output port; connect an amplifier or speaker for audio.

Operation Controls and Functions

No.	Name	Function Description
5.	Power switch	Press this switch to power on/off the device.
6.	EDID DIAL switch	Used to set EDID mode. Please refer to "EDID Mode (Page 13)" for details.
7.	HDMI port	IN: HDMI input port; connect an HDMI source device such as DVD Player or set-top box with an HDMI cable.
		LOOP OUT: HDMI loop output port; connect an HDMI display such as TV or Monitor with an HDMI cable.
8.	HDBT OUTPUT port (1-2)	Connect to the HDBT IN port of the Receiver with a CAT cable.
9.	Link Signal Indicator (Green)	<ul style="list-style-type: none">• Illuminating: Transmitter and receiver are connected.• Dark: Transmitter and receiver are not connected.
10.	Data Signal Indicator (Orange)	<ul style="list-style-type: none">• Illuminating: HDMI signal with HDCP.• Flashing: HDMI signal without HDCP.• Dark: No HDMI signal.
11.	DC 24V	Plug the DC 24V power supply into the unit and connect the adapter to an AC outlet. (Note: The Transmitter can power the Receiver via the CAT cable.)

Operation Controls and Functions

Receiver

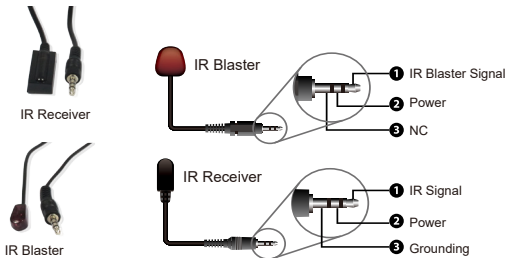


No.	Name	Function Description
1.	Power LED	When the Receiver is powered on, the red power LED will turn on.
2.	SERVICE port	Used for firmware update.
3.	DC 24V	Plug DC 24V/1A power supply into the unit and connect the adapter to an AC outlet. (Note: The Receiver can be powered by the Transmitter via the CAT cable, so a separate power supply is not required.)
4.	HDBT IN	Connect to the HDBT OUTPUT port of the Transmitter with a CAT cable.
5.	Link Signal Indicator (Green)	When the Receiver is powered on, the power indicator will turn on.
6.	Data Signal Indicator (Orange)	<ul style="list-style-type: none">▪ Illuminating: HDMI signal with HDCP.▪ Flashing: HDMI signal without HDCP.▪ Dark: No HDMI signal.

Operation Controls and Functions

No.	Name	Function Description
7.	HDMI OUT	HDMI output port; connect an HDMI display such as TV or Projector with an HDMI cable.
8.	AUDIO OUT	Audio output port; connect to a speaker or soundbar.
9.	IR IN	Connect the IR Receiver cable. The IR signal will be sent to the IR OUT port of the Transmitter.
10.	IR OUT	Connect the IR Blaster cable. The IR signal will be received from the IR IN port of the Transmitter.
11.	RS-232	3-pin Phoenix connector for RS-232 command transmission. The RS-232 command will pass-through from Transmitter to Receiver or from Receiver to Transmitter.

IR Pin Definition



Note: When the angle between the IR receiver and the remote control is $\pm 45^\circ$, the transmission distance is 0-5 meters; when the angle between the IR receiver and the remote control is $\pm 90^\circ$, the transmission distance is 0-8 meters.

EDID Mode

The defined EDID setting list of the product is shown below.

1 means "UP" and 0 means "DOWN"

EDID Mode	EDID Description	EDID Mode	EDID Description
11111	1080P, Stereo 2.0	01111	4K/2K60Hz_444, Dolby/DTS 5.1
11110	1080P, Dolby/DTS 5.1	01110	4K/2K60Hz_444, HD Audio 7.1
11101	1080P, HD Audio 7.1	01101	4K/2K60Hz_444, Stereo 2.0 HDR
11100	1080I, Stereo 2.0	01100	4K/2K60Hz_444, Dolby/DTS 5.1 HDR
11011	1080I, Dolby/DTS 5.1	01011	4K/2K60Hz_444, HD Audio 7.1 HDR
11010	1080I, HD Audio 7.1	01010	COPY_FROM_LOOP OUT
11001	1080P 3D, Stereo 2.0	01001	COPY_FROM_HDBT OUT1
11000	1080P 3D, Dolby/DTS 5.1	01000	COPY_FROM_HDBT OUT2
10111	1080P 3D, HD Audio 7.1	00111	1080P, Stereo 2.0
10110	4K/2K30Hz_444, Stereo Audio 2.0	00110	1080P, Stereo 2.0
10101	4K/2K30Hz_444, Dolby/DTS 5.1	00101	1080P, Stereo 2.0
10100	4K/2K30Hz_444, HD Audio 7.1	00100	1080P, Stereo 2.0
10011	4K/2K60Hz_420, Stereo Audio 2.0	00011	1080P, Stereo 2.0
10010	4K/2K60Hz_420, Dolby/DTS 5.1	00010	1080P, Stereo 2.0
10001	4K/2K60Hz_420, HD Audio 7.1	00001	1080P, Stereo 2.0
10000	4K/2K60Hz_444, Stereo Audio 2.0	00000	PC control mode

ASCII Commands

The product also supports ASCII command control. Connect the RS-232 port of the product to a PC with a 3-pin phoenix connector cable. Then, open a Serial Command tool on the PC to send ASCII commands to control the product.

The ASCII commands list is as below.

ASCII Commands				
Serial port protocol. Baud rate: 115200 (default), Data bits: 8bit, Stop bits:1; Check bit: 0				
x - Parameter 1; y - Parameter 2; ! - Delimiter				
Command Code	Function Description	Example	Feedback	Default
Power				
s power z!	Power on/off the device.z=0-1 (z=0 power off, z=1 power on)	s power 1!	Power on System Initializing... Initialization Finished! FW version x.xx.xx	power on
r power!	Get current power state	r power!	power on/power off	
s reboot!	Reboot the device	s reboot!	Reboot... System Initializing... Initialization Finished! FW version x.xx.xx	

ASCII Commands

Command Code	Function Description	Example	Feedback	Default
System Setting				
help!	List all commands	help!		
r type!	Get device model	r type!	UHD12-EXB400-K	
r status!	Get device current status	r status!	Get the unit all status: power, in/out connection, edid mode	
r fw version!	Get Firmware version	r fw version!	MCU BOOT: Vx.xx.xx MCU APP: Vx.xx.xx	
r link in!	Get the connection status of the input port	r link in!	HDMI IN: connect	
r link out y!	Get the connection status of the y output port, y=0~3 (0=all, 1~2=HDBT 1~2, 3 = loop out)	r link out 1!	hdmi loop out: connect hdbt output 1: connect	
s reset!	Reset to factory defaults	s reset!	Reset to factory defaults System Initializing... Initialization Finished! FW version x.xx.xx	

ASCII Commands

Command Code	Function Description	Example	Feedback	Default
Output Setting				
s hdmi stream z!	Set hdmi loop output stream on/off z=0-1 (0:disable,1:enable)	s hdmi stream 1 !	Enable hdmi loop out stream Disable hdmi loop out stream	enable
s hdmi hdcp z!	Set hdmi loop output hdcp on/off z=0-1 (0:disable,1:enable)	s hdmi hdcp 1 !	Enable hdmi loop out hdcp Disable hdmi loop out hdcp	enable
s hdbt y hdcp z!	Set hdbt output y hdcp on/off, y=0-2 (0=all) z=0-1 (0:disable, 1:enable)	s hdbt 1 hdcp 1 ! s hdbt 0 hdcp 1 !	Enable hdbt output 1 hdcp Disable hdbt output 1 hdcp Enable hdbt all outputs hdcp Disable hdbt all outputs hdcp	enable
s hdbt y stream z!	Set hdbt output y stream on/off, y=0-2 (0=all) z=0-1 (0:disable,1:enable)	s hdbt 1 stream 1 ! s hdbt 0 stream 1 !	Enable hdbt output 1 stream Disable hdbt output 1 stream Enable hdbt all outputs stream Disable hdbt all outputs stream	enable
r hdmi stream!	Get hdmi loop out stream status	r hdmi stream!	Enable hdmi output stream	
r hdmi hdcp!	Get hdmi loop out hdcp status	r hdmi hdcp!	Enable hdmi output hdcp	

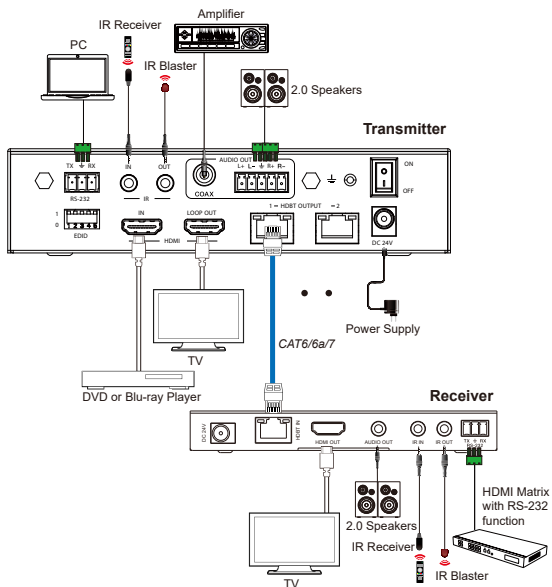
ASCII Commands

Command Code	Function Description	Example	Feedback	Default
Output Setting				
r hdbt y hdcp!	Get hdbt output y hdcp status, y=0-2 (0=all)	r hdbt 1 hdcp!	Enable hdbt output 1 hdcp	
r hdbt stream!	Get hdbt output y stream status, y=0-2 (0=all)	r hdbt 1 stream!	Enable hdbt output 1 stream	
EDID Setting				
s edid in from z!	Set input EDID from default EDID z, z=1-24 1. 1080p,Stereo Audio 2.0 2. 1080p,Dolby/DTS 5.1 3. 1080p,HD Audio 7.1 4. 1080i,Stereo Audio 2.0 5. 1080i,Dolby/DTS 5.1 6. 1080i,HD Audio 7.1 7. 3D,Stereo Audio 2.0 8. 3D,Dolby/DTS 5.1 9. 3D,HD Audio 7.1 10. 4K2K30_444, Stereo Audio 2.0 11. 4K2K30_444,Dolby/DTS 5.1 12. 4K2K30_444,HD Audio 7.1 13. 4K2K60_420, Stereo Audio 2.0 14. 4K2K60_420, Dolby/DTS 5.1 15. 4K2K60_420,HD Audio 7.1 16. 4K2K60_444, Stereo Audio 2.0 17. 4K2K60_444, Dolby/DTS 5.1 18. 4K2K60_444,HD Audio 7.1 19. 4K2K60_444, Stereo Audio 2.0 HDR 20. 4K2K60_444, Dolby/DTS 5.1 HDR 21. 4K2K60_444, HD Audio 7.1 HDR 22. copy from hdmi loop out 23. copy from hdbt output 1 24. copy from hdbt output 2	s edid in from 1!	input EDID:1080p, Stereo Audio 2.0 Please toggle EDID dip switch to 00000!	1080p, Stereo Audio 2.0

ASCII Commands

Command Code	Function Description	Example	Feedback	Default
EDID Setting				
s edid user1 00 FF FF FF FF ...!	Set user1 EDID data	s edid user1 00 ff ff ff ff ... !	user1 EDID data: 00 FF FF ...	
r edid user1!	Get user1 EDID data	r edid user1!	user1 EDID data : 00 FF FF FF FF FF FF 00	
r edid in!	Get EDID status of the input	r edid in!	input EDID: 4K2K60_ 444, Stereo Audio 2.0	
r edid in data!	Get the EDID data of the hdmi input	r edid in data!	EDID data : 00 FF FF FF FF FF FF 00	
RS-232 BYPASS Setting				
s rs232 bypass hdbt y!	Set RS-232 port connect to HDBT out1 Receiver RS-232 port, y=0-3 (0=all, 1-2= hdbt out 1-2, 3=NC)	s rs232 by- pass hdbt 1!	RS-232 connect to HDBT OUT1 RS-232 not connect to HDBT OUT	y=0
r rs232 bypass!	Get RS-232 port connect to HDBT out receiver RS-232 port	r rs232 bypass!	RS-232 connect to HDBT OUT1 RS-232 connect to all HDBT OUT RS-232 not connect to HDBT OUT	
s device baud w size x stop y parity z!	Set receiver control device COM port setting, w=2400, 4800, 9600,19200,38400, 57600,115200, x=7,8 y=1,2, z=none, ven, odd	s device baud 57600 size 8 stop 1 parity none!	receiver device COM port setting baudrate: 57600 data size: 8, stop:1 parity: none	
s rs232 time x!	Set send RS232 command wait time x=200-5000ms	s rs232 time 200!	send RS-232 command wait time 200ms	200ms

Application Example



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HIGH-DEFINITION MULTIMEDIA INTERFACE

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Up To 400ft**

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